UNITY THROUGH SERIAL DESIGN: ROW STRUCTURE, B-A-C-H MOTIVIC PROCESSES, AND TONAL REFERENCES IN *SIMBOLO* FROM LUIGI DALLAPICCOLA'S *QUADERNO MUSICALE DI ANNALIBERA*

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Abstract

Background and Objectives: This research article presents an in-depth theoretical and structural analysis of *Simbolo*, the first movement of Luigi Dallapiccola's 1952 solo piano collection, *Quaderno Musicale di Annalibera*. Composed for the Pittsburgh International Contemporary Music Festival and dedicated to the composer's daughter, the collection consists of eleven short pieces unified entirely by a single twelve-tone row. Notably, the collection is intended to be performed in its entirety rather than existing solely for pedagogical purposes, and Dallapiccola later repurposed this exact twelve-tone series in major works like *Canti di Liberazione* and *Quaderno: Variazioni per orchestra*. The primary objective of this study is to examine the specific serial techniques Dallapiccola employs within *Simbolo*, with a specialized focus on row organization, motivic permutations, the prominent role of the B-A-C-H motive, and the seamless integration of tonal references within a strict dodecaphonic framework.

Methods: The study systematically breaks down the twelve-tone foundation of the work by mapping the complete twelve-tone matrix and detailing the specific sequence of row forms that structure the piece, starting with the basic tone row (P0: B♭-B-E♭-G♭-A♭-D-D♭-F-G-C-A-E). Furthermore, the analysis explores the formal structure of *Simbolo* by examining distinct shifts in articulation, tempo alterations, textural variations, and fluid time signature changes. The structural and thematic role of the four-note B-A-C-H motive (B-flat, A, C, and B-natural) is traced through its exact original statements, retrogrades, inversions, and retrograde-inversions across the composition. Additional methods include analyzing harmonic sonorities to identify triadic relationships and evaluating dynamic markings in relation to row deployments.

Results: The analysis reveals that the basic tone row (P0) serves as a definitive framing device, utilized at both the opening and the conclusion of the piece. The B-A-C-H motive is inherently embedded within this primary row—for example, the P form presents it transposed to E♭-D-F-E—and acts as a paramount unifying element. The B-A-C-H motive recurs throughout the movement in its original, retrograde, inversion, and retrograde-inversion forms, together with additional permutations and reorderings of its pitch-class collection, including

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circular permutation. Formally, the piece follows a clear A-B-A' ternary structure (A: mm. 1-16, B: mm. 17-36, A': mm. 37-46), delineated by contrasting phrasing, dynamics, and alternating accompaniment patterns. The climax occurs between measures 25 and 29, reaching the highest pitch (B♭) and loudest dynamic (*mf*). The study highlights that frequent time signature changes (e.g., 3/4, 7/8, 6/8, 5/8) and specific dynamic shifts directly correspond with and signal the arrival of new row forms. Most significantly, pronounced tonal references coexist alongside these rigorous serial procedures. Tonal implications are projected through pedal points, triad-implying hexachords (such as B-major and A-minor-seventh chords), and local tonic-dominant allusions, evidenced by an E♭ minor triad moving to a dominant-functioning B♭ seventh chord, and by a cadence-like gesture in which a G half-diminished seventh resolves by stepwise voice leading into the closing A minor triad. **Conclusions:** Ultimately, these findings thoroughly illustrate Dallapiccola's highly distinctive and expressive approach to twelve-tone composition. A profound sense of unity is achieved through the symmetrical framing of the P0 row, the identical five-measure counts in the opening and closing statements, and the pervasive development of the historical B-A-C-H motive. By brilliantly synthesizing strict serial techniques with traditional tonal implications, Dallapiccola successfully creates an organically cohesive and unified musical structure.

Keywords: Luigi Dallapiccola / Simbolo / Twelve-Tone Technique / B-A-C-H Motive

Introduction

Luigi Dallapiccola's *Simbolo* is the first piece from the *Quaderno Musicale di Annalibera* (A Musical Notebook for Annalibera). The collection comprises eleven short pieces for piano solo, composed in 1952 for the Pittsburgh International Contemporary Music Festival.[1] The work was dedicated to the composer's daughter, Annalibera. The title of this collection is derived from the *Notebook for Anna Magdalena Bach*, as well as the composer's daughter's name.[2] However, this collection is not solely intended for pedagogical purposes. The composer intended the eleven pieces to be performed only as a complete set.[3] All eleven pieces in the *Quaderno Musicale di Annalibera* are based on the same row. Later, Dallapiccola also used this twelve-tone series in the *Canti di Liberazione* (Songs of Liberation) for chorus and large orchestra, and the *Quaderno: Variazioni per orchestra*.[4] Nathan discusses Dallapiccola's twelve-tone works in relation to both serial techniques and the Italian bel canto tradition, emphasizing the combination of twelve-tone procedures

[1] Miguel A. Roig-Francolí, *Understanding Post-Tonal Music* (Boston: McGraw-Hill, 2008), 174.

[2] Raymond Fearn, *The Music of Luigi Dallapiccola* (Rochester, NY: University of Rochester Press, 2003), 157-159.

[3] Elizabeth Susanne Hansing, "A Pedagogical Analysis of Luigi Dallapiccola's *Quaderno musicale di Annalibera*" (Master's thesis, University of Texas at Austin, 1981), 9, http://hdl.handle.net/2152/34178.

[4] Michael Eckert, "Notes & Bios: Luigi Dallapiccola, *Quaderno Musicale di Annalibera* (1952)," in *Season 39, Concert 3*, Center for New Music, University of Iowa, June 12, 2015, https://cnm.uiowa.edu/concerts/2015/06/season-39-concert-3.

with lyrical expression and rich harmonic sonorities.[5] Set-theoretic approaches have also been applied to other movements of *Quaderno Musicale di Annalibera*, particularly in relation to matrix organization, invariance, and cross-partitioning of the twelve-tone row.[6] Previous studies have addressed serial structure, the B-A-C-H motive, and tonal implications from different perspectives; the present study brings these elements together through a systematic examination of row-form deployment, motivic permutations, formal structure, and tonal references.

Research Objectives

The research seeks to analyze the serial techniques employed in Luigi Dallapiccola's *Simbolo* from *Quaderno Musicale di Annalibera*, with particular emphasis on row organization, the structural role of the B-A-C-H motive and its permutations, and the integration of tonal references within a twelve-tone compositional framework.

Research Methodology

This study employs a theoretical and analytical approach based on a detailed examination of Dallapiccola's *Simbolo*. The analysis uses the published score as the primary source and focuses on the organization and treatment of the twelve-tone row throughout the movement. The basic tone row (P0) is first identified, and a complete twelve-tone matrix is constructed to determine the row forms used in the composition. The occurrence of each row form is then examined according to its measure numbers, starting pitch, and relationship to adjacent row statements.

The analysis also examines the B-A-C-H motive (B-flat, A, C, and B-natural) as a structural and thematic element. Its occurrences are identified according to original, retrograde, inversion, and retrograde-inversion forms. Additional permutations and reorderings associated with the motive are also examined to determine how the motive contributes to continuity throughout the movement.

The formal structure of *Simbolo* is examined through changes in articulation, tempo, texture, time signature, and dynamics. These musical features are compared with the appearance and change of row forms in order to identify relationships between serial organization and formal divisions. The movement is considered in terms of its three main sections, A (mm. 1-16), B (mm. 17-36), and A′ (mm. 37-46).

Finally, the study examines tonal references within the twelve-tone framework. Particular attention is given to pedal points, repeated notes, stepwise melodic movement, triadic and seventh-chord sonorities, and local tonic-dominant relationships. The two hexachords of the P0 row are also examined for their tonal

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[5] Hans Nathan, "The Twelve-Tone Compositions of Luigi Dallapiccola," *The Musical Quarterly* 44, no. 3 (July 1958): 289-310.

[6] Jacqueline Ravensbergen, "The Twentieth-Century Canon: An Analysis of Luigi Dallapiccola's Canonic Works from His *Quaderno Musicale di Annalibera*" (Master's thesis, University of Ottawa, 2012), 9-39.

implications. These analytical observations are considered together to explain how serial organization, motivic development, formal structure, and tonal references contribute to the overall unity of *Simbolo*.

Serial Structure and Row Analysis

Dallapiccola's *Quaderno Musicale di Annalibera* is entirely based on a single row. This basic tone row serves as P0 in the first piece of the collection, *Simbolo* (See Figure 1). The row consists of the pitch sequence B♭-B-E♭-G♭-A♭-D-D♭-F-G-C-A-E.
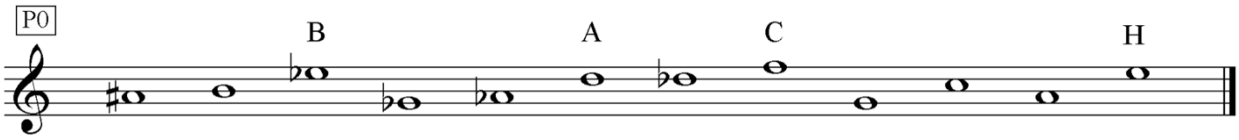


Figure 1 The basic tone row (P0) of *Simbolo*

Source: by author

The twelve-tone matrix of *Simbolo*, in which P0 is listed horizontally across the top row and I0 is listed vertically down the left column, organizes the pitch material for the movement (Table 1). The complete row-form content for this piece is P0, R1, P7, R7, I8, R6, RI0, R2, P9, R9, I10, R0, and P0. The row form, P0, is clearly used at the beginning and the end of the piece.

Table 1 Twelve-tone matrix of *Simbolo*

Source: by author

	I0	I1	I5	I8	I10	I4	I3	I7	I9	I2	I11	I6
P0	A♯	B	E♭	G♭	A♭	D	D♭	F	G	C	A	E
P11	A	A♯	D	F	G	D♭	C	E	G♭	B	A♭	E♭
P7	F	G♭	A♯	D♭	E♭	A	A♭	C	D	G	E	B
P4	D	E♭	G	A♯	C	G♭	F	A	B	E	D♭	A♭
P2	C	D♭	F	A♭	A♯	E	E♭	G	A	D	B	G♭
P8	G♭	G	B	D	E	A♯	A	D♭	E♭	A♭	F	C
P9	G	A♭	C	E♭	F	B	A♯	D	E	A	G♭	D♭
P5	E♭	E	A♭	B	D♭	G	G♭	A♯	C	F	D	A
P3	D♭	D	G♭	A	B	F	E	A♭	A♯	E♭	C	G
P10	A♭	A	D♭	E	G♭	C	B	E♭	F	A♯	G	D
P1	B	C	E	G	A	E♭	D	G♭	A♭	D♭	A♯	F
P6	E	F	A	C	D	A♭	G	B	D♭	G♭	E♭	A♯

Table 2 illustrates the use of the row forms throughout the piece, including the measures, row form, and starting pitch of each statement. Some row forms are repeated throughout the piece. For example, P7 appears again in m. 15, while P9 and R9 alternate in mm. 25-32. The row forms are also sometimes connected between adjacent statements. For example, R6 begins on the fourth sixteenth note of m. 16 and continues to the downbeat of m. 17.

Table 2 Summary of row forms in *Simbolo*

Source: by author

Section	Measures	Row form	Starting pitch and features
A (mm. 1-16)	mm. 1-5	P0	B♭ - primary opening row, stated over the B♭1-B2 ostinato
	m. 6	R1	F - retrograde of P1
	m. 7	P7	F - states the B-A-C-H motive at its original pitch level (B♭-A-C-B)
	mm. 8-10	R7	B - retrograde of P7
	mm. 11-14	I8	G♭ - inversion
	m. 15	P7	F - restatement of P7
	mm. 16-17	R6	B♭ - begins on the fourth sixteenth note of m. 16 and closes on the downbeat of m. 17
B (mm. 17-36)	mm. 17-20	RI0	E - lighter texture with broken arpeggiated figures
	mm. 21-24	R2	G♭ - retrograde
	m. 25	P9	G - climax; B-A-C-H transposed to C-B-D-D♭
	m. 26	R9	D♭ - retrograde of P9
	m. 27	P9	G - repetition of P9
	m. 28	R9 (var.)	D♭ - retrograde variant; the final two pitch classes (G and A♭) are reversed
	mm. 29-32	P9	G - sustained statement of P9
	mm. 33-37	I10	A♭ - notated across three staves
A′ (mm. 37-46)	mm. 37-42	R0	E - retrograde of the primary row P0; return to the original tempo
	mm. 42-46	P0	B♭ - complete return of the opening P0 row to close the movement

The deployment of these row forms illustrates the varied use of the twelve-tone series throughout the piece. In section A, P0 is presented at the beginning, followed by R1, P7, R7, I8, and R6. In section B, the row forms RI0, R2, P9, R9, and I10 are used, with P9 and R9 appearing repeatedly around the climax of the piece. In section A′, R0 is followed by P0, which returns at the end of the piece. The use of P0 at both

the beginning and the end creates a sense of structural unity and frames the movement through the recurrence of the primary row.

Norris observes that the succession of row forms in Section A maintains invariant pitch-class relationships across the different row transformations.[7] In particular, the succession of R1, P7, R7, and I8 preserves related pitch-class collections between adjacent row forms.

The B-A-C-H Motive and Permutations

Simbolo makes use of the B-A-C-H motive (B-flat, A, C, and B-natural) throughout the piece. In *Simbolo*, the B-A-C-H motive is embedded in every row-form and developed throughout the piece. The apparent use of the B-A-C-H motive is among the characteristics of the row form. For example, the P form presents the B-A-C-H motive in original order but transposed to E-flat - D - F - E (See Figure 2).

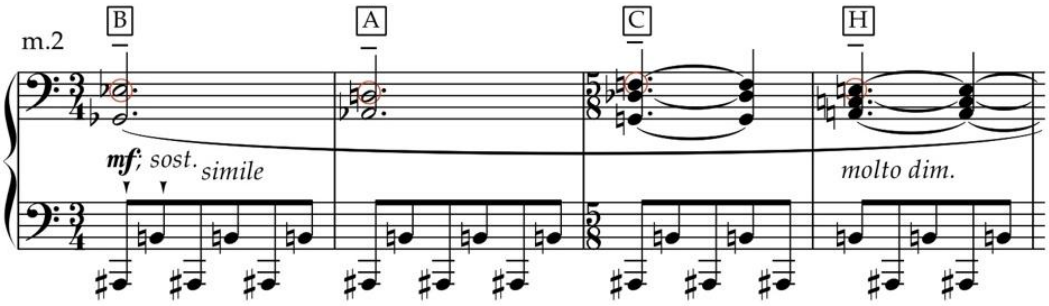


Figure 2 Opening statement of the primary row (P0) and the transposed B-A-C-H motive, mm. 2-5

Source: Luigi Dallapiccola, "Simbolo," in *Quaderno musicale di Annalibera* (Milan: Suvini Zerboni, 1953).

Conversely, the I form presents an inversion of the B-A-C-H motive (See Figure 3); the R form presents a retrograde of the B-A-C-H motive; and the RI form presents a retrograde inversion of the B-A-C-H motive. Because the B-A-C-H motive is inversionally symmetrical, the I and R forms are the same as well as the P and RI forms.

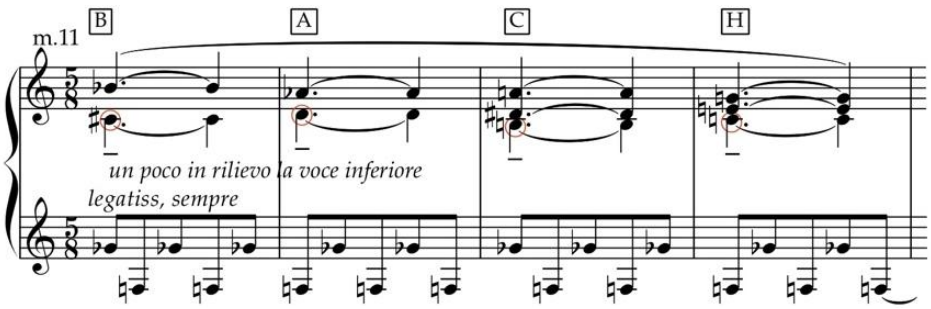


Figure 3 An inversion of the B-A-C-H motive (C♯-D-B-C), mm. 11-14

Source: Luigi Dallapiccola, "Simbolo," in *Quaderno musicale di Annalibera* (Milan: Suvini Zerboni, 1953).

[7] Scott Norris, "An Analysis of Luigi Dallapiccola's 'Simbolo,' and *17 Times* for String Quartet" (PhD diss., Brandeis University, 1997), 4-5.

This B-A-C-H motive makes its initial appearance in its original order in mm. 2-5 in the upper voice of the right hand (Figure 2). Then, the B-A-C-H motive appears constantly throughout the piece in both original (See Figure 4) and inverted form, along with several permutations of the row form. The recurrence of the B-A-C-H motive is described as follows:

- **Original form:** mm. 2-5 (transposed P0), m. 7 (untransposed P7), mm. 15-16 (untransposed P7), mm. 25 & 27 (P9), mm. 29-30 (P9), and mm. 42-46 (transposed P0)
- **Retrograde:** m. 6 (R1), m. 8 (R7), m. 16 (R6), mm. 21-24 (R2), mm. 26 & 28 (R9), and mm. 38-42 (R0).
- **Inversion:** mm. 11-14 (I8) and 33-36 (I10).
- **Retrograde Inversion:** mm. 17-20 (RI0 stated *in rilievo* in the left hand).

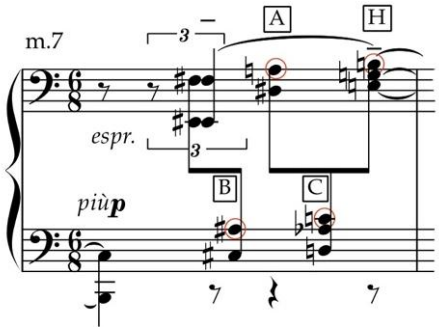


Figure 4 The B-A-C-H motive at its original pitch-class level, m. 7

Source: Luigi Dallapiccola, "Simbolo," in *Quaderno musicale di Annalibera* (Milan: Suvini Zerboni, 1953).

The B-A-C-H motive is presented in long note values as well as in chordal texture. Moreover, there are additional permutations of the B-A-C-H motive which often appear along with the B-A-C-H motive itself. These additional permutations include circular permutations and other reorderings of the B-A-C-H motive's pitch-class collection. In measures 2-5 (Figure 5), the tenor line G♭-A♭-G-A presents a general reordering, represented as [0,2,1,3] when G♭ is assigned 0. The descending chromatic line E♭-D-D♭-C can be understood as a circular permutation of the transposed B-A-C-H sequence D♭-C-E♭-D, beginning on its third note while preserving cyclic order. Together, these lines show how the same chromatic collection supports different melodic arrangements.

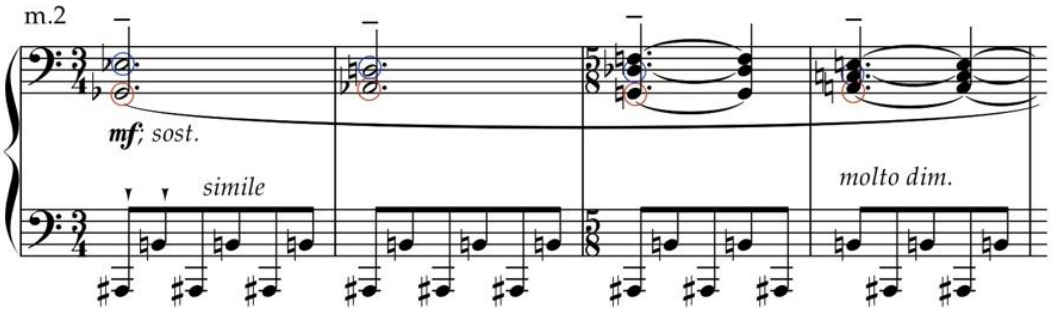


Figure 5 General reordering in the tenor line (G♭-A♭-G-A) and circular permutation in the descending chromatic line (E♭-D-D♭-C), mm. 2-5

Source: Luigi Dallapiccola, "Simbolo," in *Quaderno musicale di Annalibera* (Milan: Suvini Zerboni, 1953).

Formal Structure and Texture

Dallapiccola's *Simbolo* consists of three distinct sections, according to articulation, tempo, and texture. The three sections can be labeled as an A-B-A' form: A (mm. 1-16), B (mm. 17-36), and A' (mm. 37-46). The climax of the piece occurs in mm. 25-29 where the piece reaches the highest (B♭) and loudest (*mf*) point.

The contrasts of articulation and tempo markings suggest clear sectional divisions in this piece as illustrated in Table 3.

Table 3 Structure of *Simbolo*

Source: by author

Section	A (mm. 1-16)	B (mm. 17-36)	A' (mm. 37-46)
Articulation	Staccatissimo (LH) / Legato (RH)	Legato (Both hands)	Staccatissimo (LH) / Legato (RH)
Tempo	*Quasi lento* (♪ = 84)	♪ = 92-96	♪ = 84

The texture also reinforces the structure of the piece. In sections A and A', the B-A-C-H motive is mostly presented in the right hand against the two-note-semitone-apart accompaniment in the left hand. At the opening of Section B (mm. 17-20), the left hand clearly presents a transposed statement of the B-A-C-H motive (E-E♭-F♯-F), accompanied by repeating two-note dyads in the right hand (See Figure 6). The rhythmic pattern of this piece is mainly presented in the form of an alternating eighth-note ostinato figure and chords. The chordal texture is clearly seen in the transition to sections B and A', for example, mm. 15-16 and mm. 25-28 (See Figure 7).
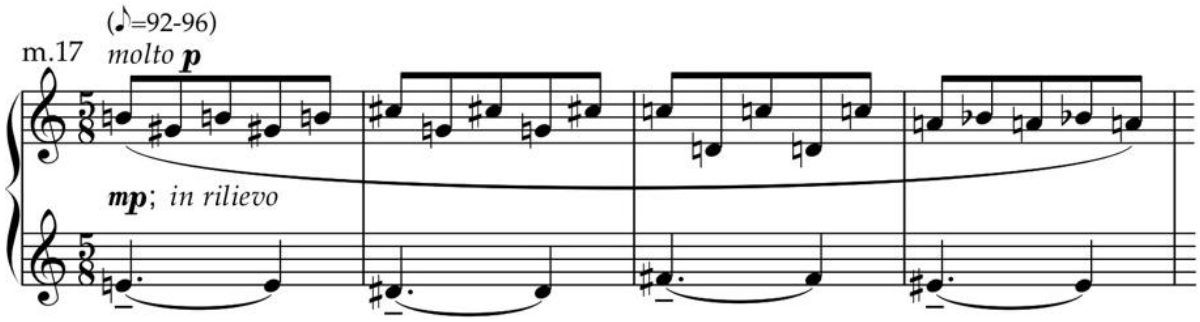


Figure 6 Opening of section B with transposed B-A-C-H motive (E-E♭-F♯-F) in the left hand, mm. 17-20

Source: Luigi Dallapiccola, "Simbolo," in *Quaderno musicale di Annalibera* (Milan: Suvini Zerboni, 1953).
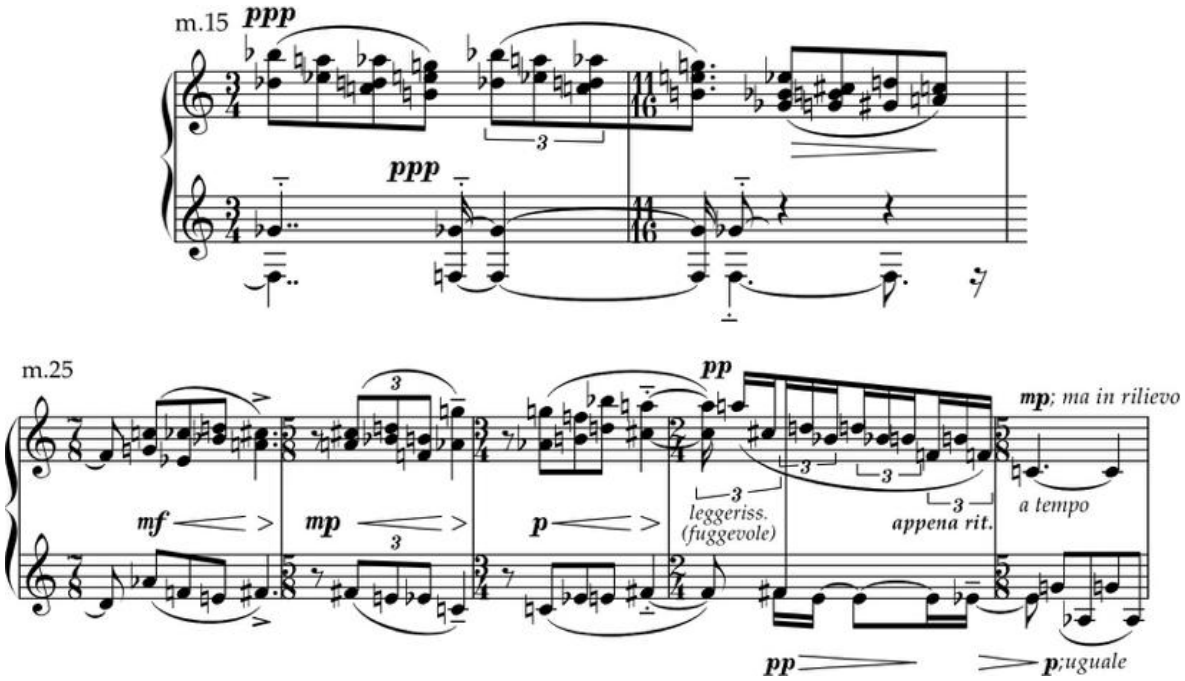


Figure 7 The chordal texture and the time signature changes, mm. 15-16 and mm. 25-28

Source: Luigi Dallapiccola, "Simbolo," in *Quaderno musicale di Annalibera* (Milan: Suvini Zerboni, 1953).

The time signature shifts often throughout the piece. Dallapiccola's use of time signatures corresponds to the change of the row form; for example, in mm. 6-8, the time signature changes from 3/4 to 7/8 in m. 6 when the second row form (R1) appears. When P7 occurs in m. 7, the time signature moves into 6/8 and changes to 5/8 in m. 8 when R7 appears (See Figure 8). This procedure can be seen in mm. 25-29 as well (See Figure 7).

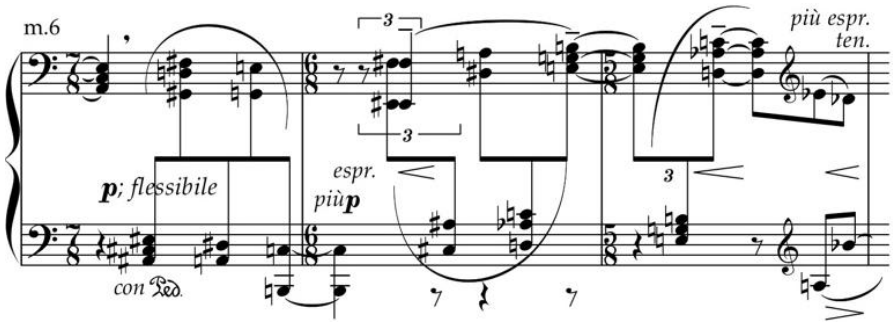


Figure 8 The time signature changes, mm. 6-8

Source: Luigi Dallapiccola, "Simbolo," in *Quaderno musicale di Annalibera* (Milan: Suvini Zerboni, 1953).

Tonal References within a Serial Context

Although a twelve-tone technique is employed in the piece, evidence of tonal references can be seen: the use of pedal points and repeated notes in the accompaniment, the stepwise melodic line in consequence of the embedded B-A-C-H motive, the layout of the score, along with the tonal sound of the piece. Mann

also observes the presence of triadic sonorities and local tonic-dominant relationships within the twelve-tone framework of *Simbolo*.[8]

The character of the tone row also accounts for tonal references by exploiting two hexachords that provide tonal implications to the row form. For example, the P0 row form consists of two hexachords (See Figure 9). The first hexachord suggests the B-major triad by considering the second, third, and fourth notes of the hexachord, while the second hexachord suggests the A-minor-seventh chord by considering the last four notes of the hexachord. This piece also starts and ends with an A minor chord; this suggests A minor as tonic, although not in a traditional sense.

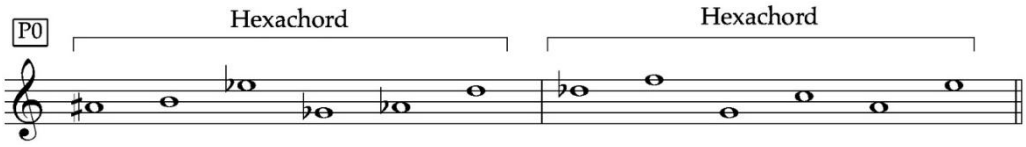


Figure 9 Two hexachords in P0 Row

Source: by author

Tonal references and local tonic-dominant allusions can be observed throughout *Simbolo*, even though functional progressions are not the norm in twelve-tone composition. For instance, the E♭ minor triad in m. 2 functions as a local tonic center that moves to a dominant-functioning B♭ seventh chord (lacking a fifth) in m. 3. In mm. 44-46, rather than a literal V-I functional cadence, Dallapiccola constructs a cadence-like gesture (See Figure 10): The G half-diminished seventh chord in m. 44 creates harmonic tension that resolves through stepwise voice leading into the final A minor triad in mm. 45-46, serving as a tonal focus to bring structural closure to the movement. Michaels approaches the tonal characteristics of Dallapiccola's music through empirical key-estimation methods, providing another perspective on the tonal implications of the twelve-tone series.[9]

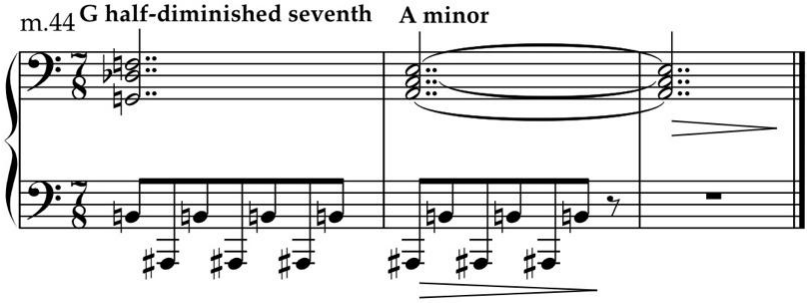


Figure 10 Cadence-like gesture and voice-leading resolution to A minor, mm 44-46

Source: Luigi Dallapiccola, "Simbolo," in *Quaderno musicale di Annalibera* (Milan: Suvini Zerboni, 1953).

[8] Rachel Elice Mann, "Tonal References in Luigi Dallapiccola's *Quaderno Musicale di Annalibera*" (Master's thesis, Texas Tech University, 2002), 22-30, 40-41.

[9] Kristofer Michaels, "Forward Thinking, with an Ear to the Past: A Performance Guide to Dallapiccola's *Quaderno Musicale di Annalibera*" (DMA diss., University of Kansas, 2016), 38-39, 60-64.

The dynamics are clearly indicated throughout the piece, ranging from *ppp* to *mf* with numerous dynamic levels in each section. The dynamics are clearly indicated when the new row form begins; for example, in mm. 25-28, the dynamic is indicated *mf* with P9, and changes to *mp*, *p*, and *pp* when the row shifts to R9, P9, and R9, respectively.

Conclusion

A sense of unity in this piece is achieved by means of the row form, the number of measures in the opening and closing statements, and the use of the B-A-C-H motive. The row form creates a sense of unity through the use of P0 at both the beginning and the end. In addition, the number of measures in the opening and closing statements is identical (5 measures each). From the analysis of Dallapiccola's *Simbolo*, the B-A-C-H motive and its permutations appear throughout the entire piece, strongly unifying it. Although this piece is a serial composition, tonal references appear throughout, as exemplified by the use of triads, seventh chords, and cadence-like gestures.

For future research, this analytical framework could be extended to explore how serial devices and tonal allusions function across other movements of *Quaderno Musicale di Annalibera*, such as *Andantino Amoroso* or *Quartina*. Further study could also utilize computational key-estimation algorithms to measure the degree of tonal concentration across the entire suite. Finally, future investigations may examine how the B-A-C-H motive and row cross-partitioning techniques in *Simbolo* relate to Dallapiccola's larger orchestral and vocal works, such as *Quaderno: Variazioni per orchestra* and *Canti di liberazione*.

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